

CLAIMS:

1. A magnetic recording medium comprising:

On a non-magnetic substrate,
at least a soft magnetic layer,
an orientation control film that controls the orientation
of a film provided directly thereabove,
an intermediate film,
a perpendicular magnetic recording film of which the axis
of easy magnetization is generally oriented perpendicular to
said substrate,
and a protective film,
wherein the intermediate film is made of a Co alloy and
has saturation magnetization (Ms) of at least 20 (emu/cc) and
equal to or less than 200 (emu/cc).

2. The magnetic recording medium according to claim 1,

wherein saturation magnetization Ms of the intermediate film
is at least 50 (emu/cc) and equal to or less than 150
(emu/cc).

3. The magnetic recording medium according to claim 1,

wherein the thickness of the intermediate film is at least 2
nm and equal to or less than 30 nm.

4. The magnetic recording medium according to claims 1,

wherein the intermediate film is made of CoCrPtB.

5. The magnetic recording medium according to claims 1,

wherein the total of a Cr content and a B content of the intermediate film is at least 23 at% and equal to or less than 35 at%.

6. The magnetic recording medium according to claims 1, wherein the Cr content of the intermediate film is at least 20 at% and equal to or less than 34 at%.

7. The magnetic recording medium according to claims 1, wherein the thickness of an amorphous structure, as the initial growth portion of the intermediate film, is equal to or less than 1 nm.

8. The magnetic recording medium according to claims 1, wherein the orientation control film has an amorphous structure.

9. The magnetic recording medium according to claims 1, wherein the orientation control film has a fine crystal structure of a mean grain diameter of equal to or less than 3 nm.

10. A method of manufacturing a magnetic recording medium, which comprises forming at least a soft magnetic layer, an orientation control film that controls the orientation of a film provided directly thereabove, an intermediate film, a perpendicular magnetic recording film of which the axis of easy magnetization is generally oriented perpendicular to a non-magnetic substrate, and a protective film, on the

substrate, while controlling so that the intermediate film is made of a Co alloy and saturation magnetization M_s of the intermediate film is at least 20 (emu/cc) and equal to or less than 200 (emu/cc).

11. A magnetic read/write apparatus comprising the magnetic recording medium of claims 1 and a single pole type head that records information on the magnetic recording medium and reads the information.